

I claim:

1. A queue selector operably coupled to a plurality of queues and an output, the queue
5 selector comprising:
 - a plurality of masks, wherein each mask comprises a plurality of bits and is
associated with one of a plurality of queue state variables, each bit representing
the status of the associated queue state variable for a different queue of the
plurality of queues, and
 - 10 a mask compare adapted to:
 - combine the plurality of masks in a bit-wise AND operation, and
 - select a queue of the plurality of queues from which to release data to the
output using the combined plurality of masks.
- 15 2. The queue selector according to claim 1, wherein the plurality of queue state variables
comprise backlog.
3. The queue selector according to claim 1, wherein the plurality of queue state variables
comprise bandwidth availability.
- 20 4. The queue selector according to claim 1, wherein the plurality of queue state variables
comprise priority.
5. The queue selector according to claim 1, wherein the queue selector further comprises
25 an arbiter adapted to select a winning queue from which to release data to the output,
wherein the winning queue is selected from among two or more candidate queues of
the plurality of queues, each candidate queue having data for release and available
bandwidth.
- 30 6. The queue selector according to claim 5, wherein the arbiter is adapted to select from
among the two or more candidate queues using round-robin.

7. The queue selector according claim 1, wherein the plurality of masks comprises:
a first group of two or more queues of the plurality of queues at a first priority,
and
5 a second group of one or more queues of the plurality of queues at a second
priority,
wherein the first priority and second priority are different.
8. The queue selector according claim 7, wherein mask compare is further adapted to:
10 combine the masks associated with the two or more queues of the first group;
if one or more queues associated with the first group has data for release, select
one of said two or more queues associated with the first group to release data to
the output.
- 15 9. The queue selector according to claim 8, wherein the mask compare is further adapted
to, if no queue associated with the first group has data for release:
combine the masks of the one or more queues associated with the second group,
and
if one or more queues associated with the first group has data for release, select
20 one of said one or more queues associated with the second group to release data
to the output.
10. The queue selector according to claim 8, wherein the mask compare is further
adapted to select one of said two or more queues associated with the first group to
25 release data to the output by round-robin, if two or more of queues associated with the
first group have data for release.
11. The queue selector according to claim 7, wherein one or more of the plurality of
queues is characterized by an available bandwidth, and wherein the mask compare is
30 adapted to decrease the available bandwidth for each of the respective queues when
the respective queue is selected to release data to the output.

12. The queue selector according to claim 7, wherein the mask compare is adapted to increase the available bandwidth of one or more queues of the plurality of queues with one or more credits.

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13. The queue selector according to claim 12, the mask compare is adapted to decrease the available bandwidth of one or more queues of the plurality of queues from which data are released to the output in accordance with the length of the data released.

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14. A queue selection method, comprising the steps of:

defining a mask for each queue state variable of a plurality of queue state variables, each mask having a plurality of bits representing the status of the associated queue state variable for a different queue of a plurality of queues;
15 determining a queue state for each of the plurality of queues by combining, for each of the plurality of queues, a bit associated with the queue from each of the plurality of masks; and
identifying one or more qualifying queues of the plurality of queues, each of the one or more qualifying queues having a queue state characterized by a positive
20 queue selection criterion.

15. The queue selection method of claim 14, wherein the positive queue selection criterion is an operand having a numerical value of "1."

25 16. The queue selection method of claim 15, wherein the step of combining the bit associated with the queue from each of the plurality of masks comprises the step of executing a bit-wise-AND operation on the bits from the plurality of masks associated with the queue.

17. The queue selection method of claim 14, wherein the step of defining a mask comprises the step of defining a backlog mask associated with a backlog queue state variable.
- 5 18. The queue selection method of claim 14, wherein the step of defining a mask comprises the step of defining a bandwidth-availability mask associated with a bandwidth-availability queue state variable.
- 10 19. The queue selection method of claim 14, wherein the step of defining a mask comprises the step of defining a priority mask associated with a priority queue state variable.
- 15 20. The queue selection method of claim 14, wherein the method further comprises, after the step of identifying one or more qualifying queues, the step of selecting a winning queue from among the one or more qualifying queues, wherein data from the winning queue is released to an output.
21. The queue selection method of claim 20, wherein the step of selecting a winning queue from the one or more qualifying queues is made round-robin.

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